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ABSTRACT

This examination of the aspects of computers and computer conferencing that can lead to their successful design and utilization focuses on task-related functions and emotional interactions in human communication and human-computer interactions. Such aspects of computer conferences as procedures, problems, advantages, and suggestions for future conferences are studied through analyses of three university-sponsored conferences: (1) a class project for a graduate seminar in communication technologies at the University of Southern California (USC); (2) a conference of the Human Communication Technology special interest group of the International Communication Association; and (3) a USC conference primarily of academicians interested in computing, who reviewed relevant books and articles and suggested taxonomies, user/role classifications, procedures, and entry levels. Elements of successful and unsuccessful computer conferences are of particular concern, and the analyses focus on comments and interactions related to such emotional aspects as like and dislike of the medium, comfort, frustration, anger, and humor. Comments about aloneness, anonymity, time-space perceptions, and feedback issues, are noted, as well as responses that indicate non-linear thought patterns. Results indicate that there is an emotional dimension present in computer conferencing, as well as a flow of thought showing spontaneity and creativity, and that task functions become enmeshed in the computer user's socio-emotional state. (LMM)

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COMPUTER CONFERENCES:
Success or Failure?

by

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Introduction

As transportation costs rise and computer communications systems become more advanced, far greater use of computer conferences, electronic mail systems, and microcomputer bulletin board systems (for which a "sub-culture" is rapidly growing) can be expected. In order to keep in touch with changing times and keep up with new developments in corporate and home computer use, it is necessary to examine those aspects of computers and computer conferencing that can lead, ultimately to their successful design and utilization.

What Is a Computer Conference?

A computer conference may not actually seem like a conference at all since there is no conference room. Computer conferences do permit equal access and participation (the "all-channel" physical structure by all participants. The computer conference (CC) could thus be considered to be a "meeting place" for a print-based discussion (Johnson-Lenz, Johnson-Lens, & Scher, 1978).

There are a variety of available software packages to accomodate different needs. Most assume that conference participants are linked via telephone to a central computer and have access to CRTs (computer terminals). Programs are generally designed for non-sophisticated users.

Typically, participants use CRTs located in their own

homes or offices. Users receive printed messages from other participants at their terminals each time they join a computer "activity." Such conferences usually involve 3 to 35 people, although numbers may vary. Conferences differ in structure of agendas (certain conference packages, such as FORUM or PLANET provide different degrees of structure and flexibility) and time frame (from several days to many months).

Computer conferencing programs permit participants to choose from a small "menu" of basic commands. People can read messages, edit entries, sent anonymous messages to one person privately, or to all members, change "activities," or refer to "help" documents, to name a few. The CC's distinctive features include:

- The ability to support synchronous and asynchronous communication. This allows the user to overcome temporal barriers as well as spacial distances.
- Each participant is physically alone with a computer terminal attached to a telephone.
- Communication is written; reading terminal output is faster than listening, while typing input is slower than speaking for most people.
- Computers can be used to structure communications and information exchange processes not possible in other group media. Data can be retrieved in the midst of a discussion, immediate feed-

back of computer voting is available, and anonymity can be had by participants (Hiltz, 1978).

- o Computer conferencing can accomodate private as well as public messaging systems.
- o Anonymous entries (both private and public)

Task and Emotional Functions

In thinking about how computer conferences might operate, it may be useful to look at task-related functions or interactions, and emotional interactions, a division suggested by Robert Bales (Bales, 1950). The task function exists because groups are formed to solve some problem by means of collaborative decision-making; the emotional (or socio-emotional or maintenance) function consists of interaction relating to personal need or motives of participants and helps hold the group together. Bales felt that these two functions are necessary, but in conflict.

To be successful, therefore, the group must establish balance or equilibrium; the positive acts must predominate over the negative ones and the group must "mesh psychologically" (Jones, Barnlund, & Haiman, 1980). Equilibrium can be aided or impeded by the socio-economic communications.

There is no clearcut evidence or basis for making predictions as to how computer conferences will "behave," although there does appear to be an emotional dimension present. There is a great deal of debate over the value of

computer conferencing for ahcieving successful task- or socio-emotional-oriented communication. It is evident from reading the literature on CCs that some believe that these two functions will blend in computer conferences; the process or task of learning the computer system may become enmeshed in the "socio-emotional" frustration of the user. Previous work by Hiltz (1978) suggests this result: tendencies in CCs were toward projections of the CC group's problems into the task situation being discussed.

Successful vs Non-successful CCs

There are some who argue that CCs can effectively facilitate different types of communication (Hiltz, 1978; Hiltz & Turoff, 1978; Johansen, Valee, & Spangler, 1979; Johnson-Lenz, Johnson-Lenz, & Scher, 1978; Phillips, 1982; Turoff, 1978; and Valee, Johansen Lupinski, & Wilson, 1978). CCs can be successful if their unique features are positively emphasized. The necessity (at least in currently existing technology) of using written communication might lead to more thoughtful and well-planned comments based on facts and pertaining to task-related communication and could emotionally satisfy a person who can say just what he/she wants to say; written communication skills can be honed and the conference could give writers a psychological edge.

The idea of being alone with one's terminal may lead to stream-of-consciousness thinking, a "letting down" of barriers and face-maintaining behaviors (Hiltz & Turoff, 1978). The

chance to speak anonymously can lead to honest opinion giving about the task at hand and candidness of emotional comments. The two "time modes"--asynchronous and synchronous--can give communication choices--tasks can be discussed simultaneously, research materials can be consulted and more thoughtful, comtemplative comments made when time is allowed for study and reflection. Furthermore, CCs can be interpersonally stimulative (Johansen, Vallee, & Spangler, 1979)--overt sociability and humor are evident.

The "all-channel" structure should provide for greater equality of participation in the conference, allowing for democratic decision-making, and emotional satisfaction. Mulitple leaders should also be found to emerge. Finally, cyclical group development may lead to successful decision-making and stimulate natural thought processes.

In contrast, others who have studied computer conferencing, particularly in comparison to face-to-face conferencing, suggest difficulties that could lead to CCs failure as a communication medium (Johanson, Vallee, & Spangler, 1979; Korzenny, 1977; Phillips, 1982; Short, Williams & Christie, 1976; and Vallee, Johnson, Lupinski, & Wilson, 1978). Many of the same features that could be beneficial are cited as being problematic. The necessity of written messages can lead to problems for those who feel they are not as "literate" as they could be and it may inhibit free exchange of emotions; lack of comfort with needed communication skills may arise,

and technical problems may affect the emotional domain--anger and upset at poor human-computer interfacing may result in confusion.

Aloneness may be frustrating due to lack of direct feedback, interfering with both task and emotional processes. Anonymity may lead to undue criticism; the computer may be seen as lacking capability to promote interpersonal relations or to allow emotional contant to be relayed. Finally, cyclical development might be a negative factor. Inequality of participation may be promoted because there is no leader to "force" participation of all members.

Most of the listeature discusses CCs in comparison to face-to-face communication. This comparison may not be relevant, however. The computer conference might better be perceived as a unique medium, and one whose "unique characteristics potentially could produce an altered state of communication" (Johnson, Vallee, & Spangler, 1979, p.12).

Method

The availability of complete computer conference transcripts affords a unique opportunity to study these and many other different aspects of human communication as well as human-computer interactions. The task and socio-emotional are examined closely in this paper. The transcripts of three actual computer conferences provide rich material for this case study, for which quotes relevant to these themes have been excerpted and presented to illustrate important points.[1]

Data for this study were gathered from three separate computer conferences. Full transcripts (with the exception of edited portions and private messages) were obtained for analysis. The conferences included:

1) A conference sponsored by the Annenberg School of Communications at the University of Southern California, titled "Computers as Communications Media." This CC was basically set up as a class project for a graduate seminar in Communication Technologies, but was open to interested outside participants. The conference used the CONFER system. Approximately 20 people were logged in at one time or another. The conference took place from February through May, 1982. The purpose was to acquaint participants with the medium, and to discuss all aspects of computer conferencing itself.

2) A conference consisting of members of the Human Communication Technology special interest group of the International Communication Association, sponsored by the University of Wisconsin, Madison. The FORUM system was used. Twenty-four people participated and the conference took place from April 1-8, 1982. This conference was set up to acquaint members with computer conferencing, and to help them exchange relevant information and ideas prior to the ICA convention.

3) A conference sponsored by the University of Southern California, which used an earlier version of the NCONFER

system at USC. Members, although not identified by profession, included people mainly from the academic world who exhibited a special interest in computing. Fifteen people participated, and the conference took place from April to June, 1975. The conferees reviewed relevant books and articles in the conference, suggested taxonomies, user role classifications, procedures, entry levels, and other creative ideas.

Transcripts were studied and content-analyzed for comments and interactions related to the main themes of interest for this paper. Attention was paid to comments relating to emotional aspects of computer conferencing including like or dislike of the medium, comfort, frustration, anger or humor. Since it is proposed that written messaging and other features unique to this medium are influential in changing the quality of communication, any interactions that seemed specifically directed towards this theme were studied. Comments about aloneness, anonymity, time-space perceptions, feedback issues, or that indicated "stream-of-consciousness" thought patterns were noted. Humorous interchanges and sections that pointed out the non-linear nature of either thoughts or group development were also concentrated upon for analysis.

The conferences from which quotes are taken are unusual in that their content areas are themselves computer conferences; thus we have computer conferences discussing

various aspects of computer conferences! As the conferences progressed, the participants, who were all interested in the topic, discussed procedures, problems and advantages, and made suggestions for future conferences. Conferees in conferences whose topics are in substantively different areas might show less concern with procedural issues, and might provide quite different types of information for analysis. Yet, these cases are still valid; in fact some are extremely creative ideas were presented.

How People Feel About CCs--The Emotional Dimension

"Computers are good for transferring information accurately."

--Wong

"It's nice to have someone to talk to when you want to be alone."

--Sutter

"You don't have to wear anything."

--Westland

"Teleconferencers do it morning, noon, and night."

--Westland

"Teleconferencers can do it long distance."

--Westland

"...the asynchrony of computer conferencing is clearly an important advantage to me."

--Sutter

"Teleconferencers can do it alone or with lots of other people."

--Cherr ("Computers as...," 1982)

Although the above text would serve as great bumper sticker material, it conveys much more important information--it relays some of the qualities that make computer conferencing (CC) a unique form of group communication. With the computer it is possible to overcome what seems to be a great paradox; people can be totally alone and yet feel they are really part of a currently communicating group or entity! When reading through the literature on computer conferencing, one is struck by what seems to be a love-hate realtionship that people have developed with this medium. Computer conferencing requires qualitatively different kinds of communications media, and personality and emotional and social factors are so important in successful use of the systems that the computer conferences as well are viewed anthromorphically. This is, they are endowed with human attributes, or given the status of symbolic totems. Hiltz and Turoff (1978) speak of computers and conferencing systems as organic, biological systems.

These interdependent systems, composed of the computer, the individual users, the task group, and the outside environment, are considered to be dynamic, and each is capable of "generating its own form of intelligent life;" systems are in this sense self-organizing (Ellis, Weerber, & Fisher, 1978). This organic "aliveness" has been sensed by participants in the Electronic Information Exchange Systems (EIES), who have come to view their group as having the

"essence of a biological system with a functioning different from the sum of the individuals who compose it." (Turoff, 1978). The idea of becoming part of such a "collective intelligence" excites many computer users, and has great emotional appeal.

The emotional dimension of computer conferencing is crucial to keep in mind, for it seems to play a vital role in computer usage. Anyone who has watched someone play computer games for hours (behind closed doors, perhaps, to hide the fact that he or she is not working!), and has seen the high level of very personal involvement, cannot deny this aspect of the human-machine interface. Hiltz and Turoff speak of Americans as having "love affiars" with computers, and their own treatment of conferencing reflects this cultural bias.

Other authors also seem to exhibit a rather emotional attitude towards computer conferencing. These feelings are reflected in the context of CCs themselves.

> "As the systems proliferate...the excitement of users as they have become familiar with the system [is evident]. So far, everyone seems to have fallen in love with the medium, reinforcing my notion that we are looking at what will become the next major medium of communication."
>
> --Thomas (USC Conference, 1975)

> "This system seems to take about one to two hours of personal use before you develop a feel for its behavior."
>
> --Sutter
>
> (several hours later) "I'm beginning to like it. Help!!"
>
> --Sutter ("Computers as...," 1982)

Thus, this "affair" can be seen to be developing. Yet, it is not altogether welcome; obviously this participant did not expect to enjoy the system, and when he began to, he was not totally certain he should like it!

Implications of a Print-Based Medium

The fact of having to use written as opposed to spoken words (at least in current operations) influences the dynamics of conferencing and thought processes. No one really understands how different media or modes operate in shaping thought patterns at all. In fact, it may be not truly understood what is meant by the nature of "information" and the link between interactive communication and information-sharing is somewhat indistinct. Does writing out messages really lead to better thought out, higher quality text; does the computer incourage "pure reason" rather than irrational human ramblings (Hiltz & Turoff, 1978)? It would seem not to be so, if the text of the conferences is carefully studied. If people pour out their innermost thoughts to unknown people at distant terminals, or "let down" public

images, then perhaps stream-of-consciousness, poetic ideas are facilitated. This series of interactions is of interest in understanding this process:

> "One of the problems with the structuring of a CC seems to be that sometimes you need to say something and you are not quite sure where the comment belongs until you are finished since it hits a stream-of-consciousness type thinking when you are comminicating like this. (The CONFER system used here does not allow you to enter statement and THEN assign them to topic areas--Ed.) In doing this, I lost the original stream of thought that caused me to comment in the first place."
>
> --Wong
>
> "It seems to me as I'm sitting here, that all my thoughts are not necessarily well-planned. There obviously is some spontenaity (whoops, how do I correct these spelling mistakes?) here, and it seems that I'm oblivious to the fact that others may evaluate my thoughts! Could it be that there is some point at which we forget the medium and concentrate on the message? CAN the computer encourage stream-of-consciousness thinking?"
>
> --Cherr

"These are really excellent points. The spontaneity is clearly there or here. I never come to the terminal with something I want to say/write. Maybe it's the traditional syndrome or always feeling like you have to come up with an answer when you're posed a question. Since you're immediately posed questions as you enter our system (CONFER) you simply take-off."

--Sutter

"I disagree with the thought that conversations aren't being evaluated. I concur with the statement that it is difficult to come to the terminal with a preplanned though flow, and as I write this I am also realizing how difficult it is to coordinate my mental and physical capabilities. My mind is thinking so much quicker than my fingers can move (and I thought of myself as a good typist)."

--Chaplin ("Computers as...," 1982)

Although the computer has been noted as being ideally suited for complex technical communications, could it not also be adapted for literary purposes just as easily? Research into designing systems for use by poets and philosophers is called for. After all, they are considered by society to be extremely "literate," as are scientists and academicians, or business managers and organizational

leaders. The three conferences discussed here consist mainly of people from within the academic community; a computer conference made up of different sorts of people, accustomed to expressing themselves in different ways and via different media, might look quite different.

Collaborative, creative efforts might be fruitful via computer conferencing. Several participants made suggestions for instituting non-real-time "transcript-centered" collaborative efforts, hopefully to result in scientific papers. Fictional work might just as easily be produced in this mediated manner.

Communication Skills--The Literacy Gap

The fact that current computer systems require a certain degree of comfort with written communications skills might present other problems. Other groups of people who might benefit from teleconferencing might be poorly accommodated. It may be that people who cannot read or write well (or who believe they cannot) will become a computer society's new "handicapped" group (Phillips, 1982).

There may be qualitative differences in the type of messages exchanged for which even letter- and paper-writing may not have prepared people. Furthermore, some people may feel more at ease when composing messages on the terminal; others may prefer to be merely "active listeners." Systems must be designed to facilitate verious levels of user skills,

functions, and needs. It would be unfortunate if, like the rich, who are the only ones who can afford to see therapists, the literate are the only ones who can use conferencing systems.

Technical Problems and User Frustration

System evaluators must never forget that problems posed by the computer itself (technical, software problems) may influence this love-hate dimension. After all, it can never be assumed that technology will be in perfect working condition, and software programs are not yet sophisticated or personalized enough to easily accommodate niave users or to meet all needs. The mere fact of having to deal with a human-computer interface may prevent certain people, who may be impatient, frustrated, fearful of typing (as are certain executives, who feel this is a secretary's domain), or uncomfortable with the technology, from becoming "addicts and dependents" of the computers (Hiltz & Turoff, 1978).

> "I am UPSET!!!!! I just found out one major disadvantage of CC...nothing I've put in has remained because I never hit the return key twice. I am taking out my frustrations on the keyboard as I pound away. Well, I can think of an advantage of the computer since I would not be able to pound away verbally the way I feel, and at least this expression of my emotion is gratifying."
>
> --Chaplin ("Computers as...," 1982)

Learning "Computer Skills"--Comfort and Limitations

Different levels of comfort associated with acquiring "computer skills" are experienced by various people:

> "I think it will take time for people to be comfortable with this system unless they are frequent and knowledgeable users of the computer already..."
>
> --Wong
>
> "W., it seems to be that it doesn't take too awfully long to get used to this system, if, and maybe it's a big if, you don't get too self-conscious about what you write."
>
> --Sutter
>
> "I don't think I'm really self-conscious about spelling and grammatical problesm; it won't change my ideas at all, and the spontaneity is my favorite part of communication this way."
>
> --Cherr ("Computers as...," 1982)

Thus, different people can learn to adapt themselves to, and even to like, using computers to communicate. Yet, the "hate" part definitely exists, even in areas such as aiding the handicapped, the lederly, the house-ridden, and other disabled people. As one can see from a report on computer conferencing by psychiatrists to aid in treating developmentally disabled persons, conferencing may be used poorly (Johansen, MacNeal, & Nyham, 1981). The failure

(and subsequent disgust of participants) points out a unique aspect of computers: the problems dealt with in a CC must be very carefully thought out and must remain within the "do-able" realm of this medium. The very complex diagnostic problems were inappropriate for these particular users to deal with in a non face-to-face setting. Although half the participants agreed that viable use could be made of computing in the future, it must be noted that certain problems need other types of meetings.

It would be sad, indeed, if these users were discouraged from future use because of one sour incident. The hate part of "love-hate" could be lessened if the system were designed for easy interfacing and if conferences were set up to deal realistically with potentially solvable problems suitable to a medium using written communications.

Aloneness

How do people deal with being "alone" with the terminal? Although all members of a computer conference have access to one another (in an "all-channel" structure) (Shane, 1979), most people sit alone in their offices while making entries. In one experiment conducted by Hiltz (1978), it was found that participants "let down" their public images of face-maintaining behavior when alone with the terminal. This may in part be due to the relaxation of pressures to conform with the group or to automatically respond to other's comments that typify such a non face-to-face medium. Two aspects

of this type of communication pattern, lack of feedback and stream-of-consciousness thinking, are fascinating to consider here. On the scale of aloneness:

> "There may be a half-life of a computer conference as any other conference. The half-life of this conference seems to be about over given observed participation. I feel that I am essentially standing up in front of an empty auditorium--which can be fun."
>
> --Sutter
>
> (with compassion!--Ed.) "Although you say 'empty auditoriums can be fun,' I will try to fill it more. That should be MORE fun."
>
> --Fredericks
>
> "The point about having a sense that your comments are not being evaluated is shared by me. Heck, I can't even see a record of our conversations!! But, more importantly, it seems to me, is the degree that you are alone when using the computer terminal."
>
> --Sutter ("Computers as...," 1982)

How is this type of message affected by this "aloneness?" First of all, if people endow the computer with human attributes, it may become anything from an accomplice in crime to a confessor; a friend and confidant or an enemy; a magician or opressor; or a psychiatrist or therapist. The

need for feedback may be sublimated by this anthromorphization; one may not need another person.

Does the Computer Change the Quality of Communication?

> "Two things occur to me viz. the quality of communication fostered (forced?) by this tool. 1) I get to do this when I WANT TO rather than when somebody scheduled it. 2) I almost always have things I wish I had thought of during the conference, but didn't. Asychnonous activities like this allow me to get those thoughts included, even after the fact."
>
> --Westland ("Computers as...," 1982)

The computer may also change the quality of communication because it facilitates the nature and use of natural cognitive processes. Humans think in non-linear terms, and thought processes might be called associative and parallel. If people can carry on many threads, converse on different levels, write several simultaneous papers, and carry on several different synchronous and asynchronous conferencing functions, this may change thinking patterns, creating a circular pattern that is not easily facilitated in Western culture. This may be important to consider in understanding how not only thinking, but entire societies, might be altered by computer conferencing. Perhaps the expression of feelings about aloneness and feedback are conceptualized best by

participants:

(On the effects of asynchronous feedback:)

"There are a multitude of complex and interacting effects. Participants are now space and time independent. You send a message or make a statement when you think of it, not when others are available. This can increase efficiency but have negative consequences for the quality of information. Since participants do not have nonverbal feedback to help them estimate the impact of their statement is having, they cannot change it in the process of addressing the group. Thus more irrelevant statements may be made. Also contributing to this is the reduced scrutiny that a statement receives at the time it is made. It is easier to make a statement without having the others present. That is, it's less threatening...we can expect more communication, or rather, more equally distributed communication. Now to make things really confusing, I said it was complex and interacting, but it is also a product of the participants around to distract you, you can probably 'say what you mean to say.' Also, you are writing your statements down, contributing to clarity of the expression. Furthermore, you have all the time you need

to obtain this clarity."

--Steinway

"Sometimes having others around to bounce off immediately can affect the quality of your thoughts. Thus, as you said, S., higher quality stuff may not come out of computer conferencing. But maybe the trick is to determine (somehow!) which types of communications are better suited for this contemplative mode and which are better for spontaneous, reactive communications media."

--Cherr ("Computers as...," 1982)

Feedback

If the transcripts of the three conferences are examined, it is apparent that feedback varies according to the time-span, tasks, and people engaged in the conferences. It is also interesting to note that people make entries in many different categories, or "activities" each time they sit down to type. Some people love and request feedback: "...am I talking to indistinct non-entities?" whereas others fear it: "...simultaneous feedback of even a small amount of negative response could quickly cool a contributor's creative ardon." (USC Conference, 1975).

Creativity is very evident throughout all the conferences and one USC conferee makes these suggestions for a feedback system:

> "...symbols [could be used to indicate) 'I am attending,' 'OK, I like it,' 'I can't tell yet, give me more, elucidate,' or '!!!!,' indicating applause...the number 1, 2, or 3...indicate the degree respondent's emotion or conviction concerning his response (USC Conference, 1975).

The Time-Space Dimension

Time and space are non-linear in a CC and this non-linearity is related to perceptions of both dimensions. Conversations may reflect spaces of days as well as of miles. Different people conversing across time zones may be influenced by everything from differing fatigue or hunger levels to feelings exerted by tidal forces! Opinion giving may increase, and feedback be more valuable because the temporally-altered CC structures allow reflective contemplation of new ideas and allows time for more elaborate opinion formation.

It is not clear, however, how time is psychologically conceptualized. A two-day gap may seem to exist in a CC context, or several minutes delay may seem interminable, depending on one's individual perceptions. Emotions may be influenced by the space-time dimension, and unexpected reactions may occur:

> "The message time is referenced to the central time zone, so I feel like I'm talking to you an hour ago."
>
> --Macy

> "Yes, M., a couple of nights ago I lost track of real time and thought J. and D. were on line when they were on an hour ago! That would be a neat study: time perception of computer conferences."
>
> --Bennett (ICA-HCT Conference, 1982)

Interpersonal Relations

If one is alone with a terminal, then how does one perceive the proximity of other group members (perceived proximity, or propinquity, has been found to be important to satisfaction in conferences)? Korzenny's (1977) theory of electronic propinquity which does not totally explain the workings of mediated conferences, does posit that functional propinquity, where the medium is used to bridge distances to bring participants together, is as acceptable for understanding and predicting certain processes of group communication.

The "social presence" dimension (Short, Williams, & Christie, 1976), or the degree to which the communicator feels that the other person(s) is actually present during an interaction, should be examined. Computers are not static machines, and are not necessarily lacking in the social presence dimension, even though there is no direct interpersonal contact. Johansen, et al. (1979) state that the social presence factor is a dynamic variable; different people see differing amounts of "social presence" in different media, and this may actually be taught or cultured. A certain

lack of social presence may be desirable, as in promoting "good" non-violent arguments and problem solutions. Yet there are definitely some perceived human characteristics attributed to the computer. Systems that are well interfaced are thought of as "forgiving" and allow "escape"; systems evolve almost organically as users shape them to their own inventive and unforseen needs.

Overt Sociability

In fact, if the social presence theory were entirely true and computers totally lacked it, then in a CC one would expect impersonal interaction, and people might tend to "treat others more like semi-mechanical objects, which can be ignored, insulted, exploited, or hurt with relative impunity" (Williams, 1977). Yet, this does not appear to be so (Hiltz, 1978). Hiltz found, and the transcripts confirm, that there is more overt sociability than one would expect. In computer conferences, one must overtly demonstrate emotion. This could result in more friendly interchanges, and more consciousness of the need to treat others humanely. What may be occurring is that the informal exchanges that occur in face-to-face meeting (asides, quick jokes) are compensated for by this sociability, and the computer itself becomes endowed with "social presence." This sociability fits in within the effort to maintain good relations and obtain socio-emotional rewards while pursuing task completion.

Although this participant feels incapable of expressing emotions via computer, it seems he does a fairly good job of it!:

> "I also want to express a personal thanks to each participant for taking us up on our offer... but I can't in this medium. Just too many people! Some of you I have known a long time and have great urges to dump personal thoughts to you here to tell you that I think of you often, and have so much to share with you and so much to find out about what you have been experiencing since we last talked. But, I stop. I don't feel this medium is made for it. Some of you I have only briefly met, and some not at all. I want to ask you about yourself and tell you about me. You know, the resume replay stuff... the stuff not yet on it. But, I haven't said much here and asked you about much. I'd rather do this in person...so for each of you many warm thanks! Your warm participation has sparked pleasure in my heart, and probably in those of other participants."
>
> --Smith (ICA-HCT Conference, 1982)

Yet, people have to think carefully about how to truly relay emotional content: It does not always flow as naturally for all people, and could be misconstrued when not accompanied

by nonverbal communications channels:

> "...My brother and I were (talking via CC). He mentioned something on a somewhat sensitive subject and I shot back a cuastic response; except that I had a huge smirk on my fact and was enjoying what was taking place. (I acknowledged some of my sensitivity to the subject but thought it was humorous.) Obviously, my brother had only the typed communication and so thought I was extremely upset."
>
> --Stocks (USC Conference, 1975)

Apparently, it is necessary to realize and anticipate what emotional beings are up against in trying to express emotions through a written channel. Perhaps people will develop compensatory skills, such as stylistic characteristics or expressions that will apply specifically to computer conferencing. Communication behaviors may expand in ways not yet dreamt of.

Humor

Humor and good natured exchanges are frequent and as metaphorical language may serve deeper, more serious purposes. Metaphors "extend the reach and depth of language." (Rossel, 1979). At another, deeper level, the imagination is let loose, and group members have an opportunity to "consolidate what is known and to organize it in a fashion that allows its more effective utilization later when various members

decide to get back down to serious business." (p. 134).

> "...one can envision the CC thread structure as a tree or...leafily like a bush or even a jungle when the introduction of new threads is heavy relative to the discussion of old ones (stem trunk growth). Or as a set of think trees; each nurtured by its own proprietor!"
>
> --Carlsbad
>
> "An implication of the image is that the conference chairperson is a gardener. What happens when the conference is infested with aphids and the like?"
>
> --Stocks
>
> "Aphids?"
>
> --Lewin
>
> "How about electronic weed killers and bug sprays?"
>
> --Gerber (USC Conference, 1975)

Humor is also used very creatively in these conferences, as can be seen by this interaction following a very lengthy discussion about developing a system of shorthand or abbreviations for computer users:

> "...my Ant Nncy usd to writ vry mch in ths styl, & evryn ed rd it ok...why dnt ppl abbrv mr?...cld it b tht th svgs time & spc arnt wrth the sml efft reqd to lrn th abbrv?..."
>
> --Carlsbad

"D YO SCE I RY O W IT NECESSARY G ER?? I KJ DRT! W UG ET AND FG T EXC B."

--Anonymous

"@*%&"96!!!! (AND YOU HAD BETTER BELIEVE IT.)"

--Anonymous

"??"

--Anonymous (USC Conference, 1975)

Even in a conference that consists of mainly task-oriented communications and exchange of factual information, humor finds its place:

"Anyone heard of a 'feel-a-phone'? It is a product based on a robot hand terminal of another user, then each grasps their respective hand; whatever is felt by one person is felt by the other (to the level of precision of the robotic process). This is being positioned as a tool for enabling the handshake in business deals, without having to travel to engage in it."

--Smith

"You will find it described in our book somewhere. We had more interesting applications in mind. However, it does sound like a nice crude beginning. No one is going to use it for its stated purpose. Like vibrators, I guess."

--Thomas (ICA-HCT Conference, 1982)

What About Expressing Disagreement?

Overt disagreement occurs frequently in the conferences analyzed here. However, there are many instances of much more subtly expressed feelings. Perhaps this occurs because of increased need for maintaining friendly relations, or perhaps it has deeper psychological roots that warrant further study:

> "(regarding future computer conferences:) The best thing you could do would be to get a terminal and a modem and join a public BBC (bulletin board system) FREE!!!"
>
> --Fonda
>
> "Free conferencing systems are fine, but when YOU put on a conference you charge fees to cover expenses and to some extent limit participants. You choose a topic and print programs. If you want progress toward a goal, you GOTTA have structure."
>
> --Westland ("Computers as...," 1982)

The lack of direct feedback seems to make some people feel uneasy. This user anticipated disagreement, but seemed to prepare himself for unfavorable reactions in advance:

> "...Computers will not become widely usable until ordinary people are able to send messages to them in ordinary language. [Until this is possible] what would you think of a system that could input

> close to twice as many words as this [voice] per minute, directly in digital form? Baloney? Maybe it is, maybe it isn't."
>
> "Give it a good long jaundiced look and tell me the worst. I can take it. It won't be the first time I have been shot down..."
>
> --Gerber (USC Conference, 1975)

The idea that has been proposed is actually very good. This person might really be fishing for "strokes" by putting himself in a vulnerable position.

Anonymity

One of the unique features of computer conferencing systems is the anonymity afforded to participants who choose it. Anonymity can give shy, critical, and perhaps altruistic people the chance to speak without personal repercussions. Participants may criticize more than they normally would, but they might also be more apt to try out outrageous or crazy new ideas in a "safe" way. Humor is important, and may be aided by the ability to hide oneself!

Yet, as these following excerpts show, anonymity is not always attainable. Certain factors may make one's writing style familiar and recognizable to others. Other impediments to anonymity creep up, in frustrating ways:

> "WHAT A TRAVESTY! HOW CAN ANYTHING I INPUT BE ANONYMOUS WHEN ALL I HAVE IS UPPER CASE CHARACTERS!!!

IN THE INTEREST OF JUSTICE, I PROPOSE THAT EVERYONE TYPE EVERYTHING IN CAPS FROM THIS POINT ON."--THE HANDICAPPER GENERAL

--Anonymous

"How about if only anonymous entries are ALL IN CAPS?"

--Anonymous

"I'll bet that entry was made by Carlsbad."

--Anonymous

"YOU LOSE! (BY THE WAY, THIS IS NOT L. SLACKS)"

--Anonymous

"PERHAPS [ENTRY] 113 WAS MADE BY STOCKS/(STOCKS)"

--ANON

"TAKE HEART SLACKS (Identity known or suspected?--Ed.) NO ONE MITYPES AS MUCH AS MEE. SO MY ENTRIES AREN'T VERY ANONYMOUS EITHER!"

The need for full expression may be aided by anonymity too:

"Considering the people participating in this conference, should we put a limit on the number of obscenities per person?"

--Charr

"SHIT NO!!! We really need to be able to express ourselves in the most natural way for effective communication. I think that occasional vulgarities

are heard often in face-to-face conferences. If acceptable there, why not in a computer conference. I suypoose your wondering why I made this any anonymous entry if I believe this? Me too." (spelling mistakes left in entry--Ed.)

--Anonymous

"Your spelling gave away your anonymity, S.!!!"

--Sutter ("Computers as..." 1982)

Equality and Leadership

Computer conferences have been hypothesized to result in greater participant equality and would be expected to produce multiple leaders, each an expert in a different area. "Latent verbal response (LVR)," a determinant of leadership in face-to-face conferencing, would not exist here, because the person fastest to respond verbally ("fastest on the draw") would not necessarity attain dominance. Leaders may be chosen according to "intelligence and correctness" (Hiltz & Turoff, 1978).

However, the lack of enforceable participation may lead to inequal participation; in fact, it has been found that 40% of all communications are attributable to 10% of participants (Vallee, Johansen, Lupinski, & Wilson, 1978). Participants may get bored and "leave" which would be considered rude in other conferences. This can affect both task and emotional aspects of the CC:

> "How can there be equality among such unequal participants in the process? I have only seen the comments of two people other than myself?"
>
> --Sutter ("Computers as...," 1982)

The asynchronous function, with lack of enforcement of participation may negatively affect consensus formation, and lead to frustrations:

> "...Anyway, since there seems to be no way to institute procedure by which all participants look at stuff regularly, you may find out that on the last day or two of the discussion, the slackers may come around to challenge all of your (and my) cherished opinions long after we have reached whatever consensus we do. That's a little like having a meeting which changes the outcome of some other meeting. It would be nice to know that we won't try to begin some important discussion on the last day simply becuase someone couldn't be bothered to mention a cricial issue until the last minute."
>
> --Westland ("Computers as...," 1982)

Computer Conferences and Group Development

Many theories of group development have been devised, but the one which seems most applicable to CCs is Fisher's "decision emergence theory." This stresses the interactions

in groups and is system and communication oriented. The unit of analysis here in an "interact" or a contiguous pair of acts. There are three hierarchical levels of this "decision emergence" theory: 1) interact categories, grouped into 2) interact pahses, which are patterned into 3) cycles. Fisher starts with an orientation phase. Phase 2 is characterized by conflict; phase 3 is an emergence phase where ambiguity mediates attitude shifts, and group decisions emerge; phase 4 is reinforcement. Over a series of meetings less time is spent in task-oriented behavior and more in socio-emotional behavior (Rosenfeld, 1973).

It seems, upon examining the text of several CCs that an initial orientation stage indeed exists. However, this stage seems to be mainly focused on straightening our procedural problems, human-computer interface frustrations, and processual issues. Perhaps this occurs because the medium is new and most systems are not yet designed to be "user-friendly."

Fisher's theory is interesting because it suggests that groups' development is cyclical rather than linear. Computer conferences seem to support this idea--they proceed in "spurts of activity" and different phases seem to occur sporadically.

Conclusion

Based on the content analysis of these three computer conferences, it is suggested that, unlike what proponents of "social presence" theory (or other theories that hold that emotional content can only be relayed via visual or

audio channels) would say, there is an emotional dimension present in CCs. The "love-hate" relationship extends through different areas and can be detected in all three conferences. The written mode certainly affects participants, as would be expected--some people feel more comfortable with writing messages than do others. However, contrary to certain researchers' expectations, statements were not necessarily more pre-planned in these CCs. In fact, there appears to be a stream of consciousness flow of thoughts that show spontenaity and creativity. The literacy gap might still prove problematic, however, until technology can provide computers that respond to spoken words. Certain participants were also uncomfortable with the communication and computer skills required, and the systems' technical failures provoked frustration.

Yet, certain people were able to verbalize their upset feelings, and thereby "work them out" as if in a therapy session. The computer seems to play a successful psychiatrist! Being alone with one's terminal seemed pleasurable to some participants; others were found to overtly request feedback to prove that someone was "listening." As Hiltz' (1978) study suggested, there is a "letting down" and a good deal of honest expression via this medium, although people disagree as to whether their comments are evaluated and what this evaluation, if existent, means to their ability to communicate well.

There appears to be a sense of successful interpersonal contact present, and a good deal of Hiltz' "overt sociability." The written mode forces participants to be outright in expressing good feelings, and the general "mood" of these conferences is undeniably amiable and filled with humor, metaphorical language, and friendliness. Yet some participants expressed concern that they would have to learn new ways to express their feelings via the CC; there was some expressed discomfort with a medium that is written and asynchronous.

Anonymous entries occurred frequently, but were not used to express disagreement very often. Father, anonymity shielded the identities of "obscene" conferees, and was mainly used for humorous pruposes.

The issue of equality of participation did arise; some inequality was sensed and was perceived to be frustrating. No method of enforcing participation existed in any of these conferences, and it was often felt that certain people were "present" more than were others. Yet, there was no way of knowing which participants were merely "active listeners" for this study, and having this ability may affect the proceedings of future conferences. No clear leaders emerged, but what is more important is that leadership did <u>not</u> arise as an issue in this study at all, although several sources suggest that strong leadership is necessary for a successful conference.

Although one must examine the transcripts in their entirety to see how the conferences themselves progressed, it is obvious that many different cycles occurred. Decisions were reached at different stages, and perceptions of the space-time dimension were perceived to be altered. Task functions were sometimes impaired by technical problems and confusion with processual issues. Aloneness did lead to some creative "thinking out loud" and many interpersonal interchanges occurred in which solutions to CC problems were discussed, creative ideas emerged, future conference and software changes suggested. In these three conferences, the task was basically the exchange of information pertinent to the conferencing medium itself, and this task seems to have been adequately performed. Perhaps this is due to the nature of the problems to be discussed and to the fact that the task was "doable" within the parameters of this medium.

Most of the literature reviewed does not deal with the relaying of emotional content, and with the compensatory behaviors that might emerge when people adapt themselves to a written medium with the characteristics of the computer conference. As the transcripts of these three cases were studies, it was observed that the task functions (including learning about the computer system and conference package themselves) do become enmeshed in the "socio-emotional" state of the users. For instance, in the process of expressing anger, a participant was able to work out her feelings, while

learning something about the technology as well.

The computer may very well lead to an "altered state of communication," which is qualitatively different from what we know now about that state or process.

A Word About the Societal Level

At this point, it should strike the reader that one must be concerned about the level of social need for computer conferencing systems. What groups can really benefit from the dynamics of CCs? Issues such as low cost, easy availability of equipment and software, and improved interface designs may not necessarily indicate high perceived need for these systems. It is necessary to know which groups of people might want such systems, and whether or not "psychological networks" of people built up solely around the computer might develop.

Negative aspects include undesirable reallocations of power, changes in leadership at many group and societal levels, inadequate software, difficulties in hardware maintenance, limited managerial understanding of computer resources in organizations, and a general lack of impetus to learn how to operate in a computer conferencing mode. Do the needs for two-way computer systems outweigh the perceived disadvantages, and can pro-CC advocates convince funding sources or the social desirability of easily accessible systems?

If computer usage elicits jealousy and power struggles, and indeed has "Jecyll-Hyde" characteristics, then this must

be taken into account by policy-makers, as well as by system designers and implementers. Policy-makers should be more sensitive to the enhancement of people's creative uses of the computer and should take note of Hiltz and Turoff's (1978) concept of computer-generated adaptive structures when allocating funds, contracting designers, and when deciding upon legislation to ensure equitable use, privacy and other important computing issues.

Thoughts for the Future

From the personality level to the world level, the impacts of computer conferencing are astonishing. If computers and computerized conferences are to succeed on the highest macro-level (national, world levels) then they must be designed and used to convey shades of emotions, to make inferences about what different people from varying cultures and backgrounds are saying, and to provide a mode for translation not only of languages but of conceptual ideas. Norms of "computer behavior" or etiquette must be established at all levels, and even humorous interactions must be provided for in a variety of forms (laughter being the best medicine, after all!).

Like humans, computers must be flexible to survive, and must reflect the great diversity of users. Design philosophies must start with the forms and functions of the users and build upon this foundation. CCs should not be set up like other mediated conferences. Researchers should ask what

components lead to satisfaction and an ethnography of newly emerging "electronic communities" would be very useful.

The realm of computer conferencing, if viewed optimistically, can lead to issues of positive influences upon morale, productivity, family relationships, games and role-playing, and a multitude of other dimensions. Participant observations, case studies, network analyses and other imaginative research methodologies are needed to study this unique phenomenon. The computer folklore is rich and growing; the organism is maturing. The inanimate computer has become part of an animate system, and its future can take many paths. There is "every form of nutrient available to feed and produce a flourishing growth of the communications medium. The only problem is utilizing computers for human interaction." (Hiltz & Turoff, 1978, p. 433). The love-hate human-machine symbiosis relationship must be studied and built upon if the computer is to become a valuable medium.

Footnotes

[1] The times and dates of entries were not included in all transcripts, and subsequently do not appear in this paper. Also, names of participants have been changed.

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